

PERMIT APPLICATION NUMBER: NRS#04.306

APPLICANT: City of Kingsport
Engineering Department
225 West Center Street
Kingsport, Tennessee 37660
(423) 229-9324

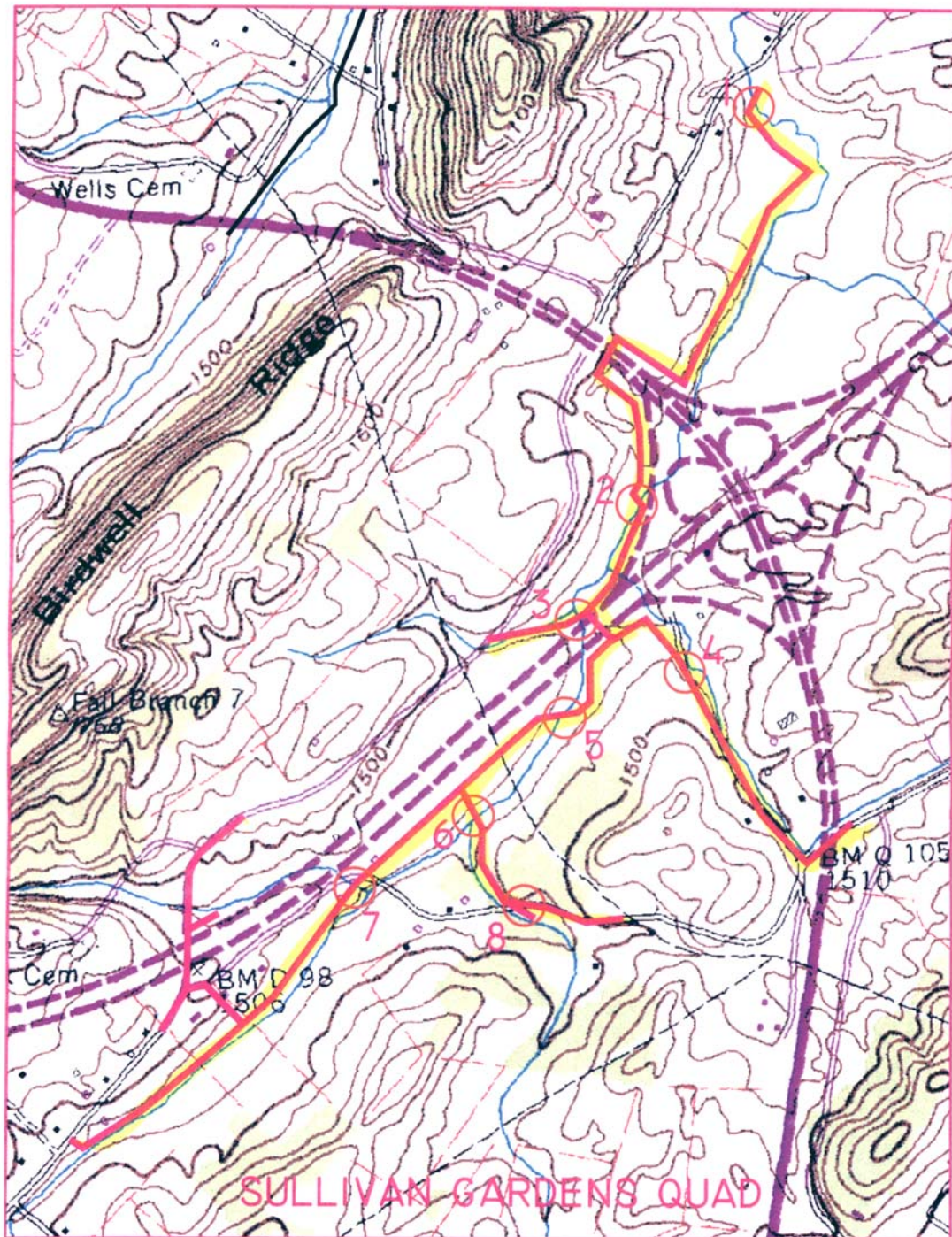
LOCATION: The proposed project is located on Kendrick Creek near the new Exit 56 on Interstate 81, Sullivan County, Tennessee.

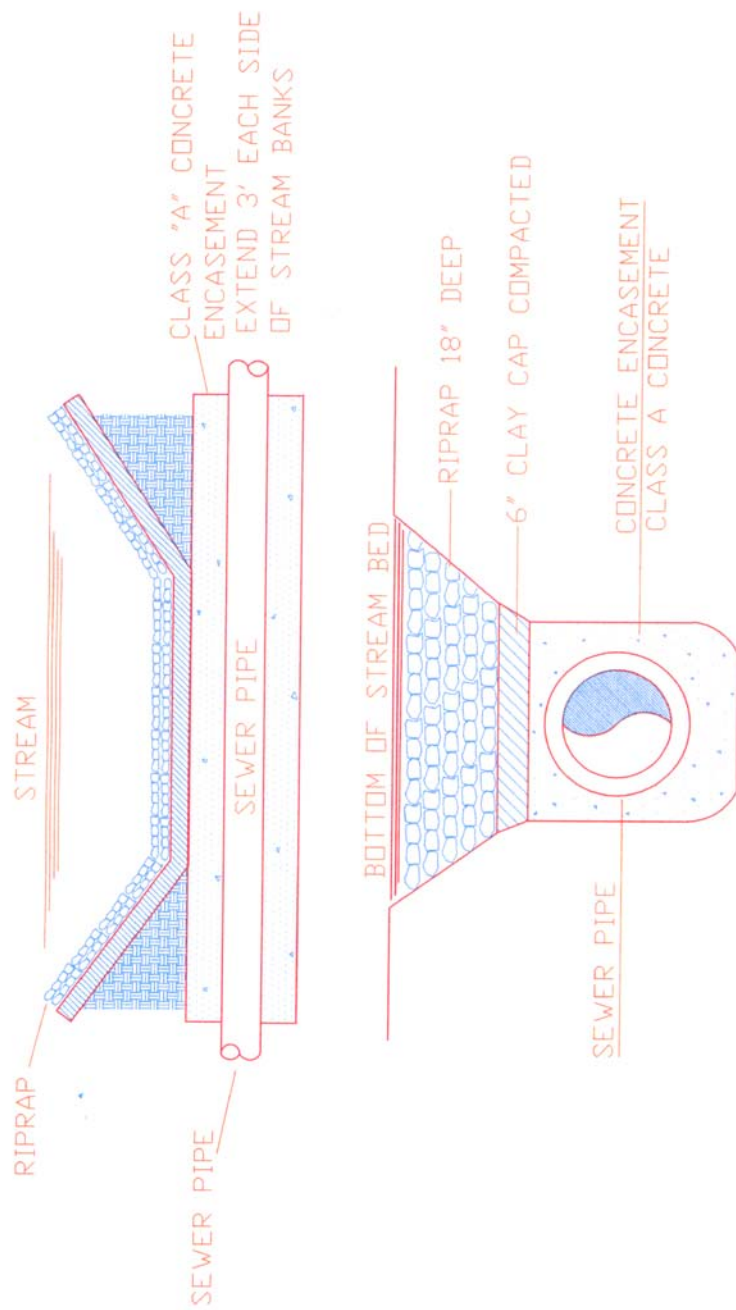
WATERSHED DESCRIPTION: Kendrick Creek is located in the South Fork Holston River Watershed (HUC TN06010102). The watershed contains 565 squares miles. Forty-eight percent of the watershed is in Tennessee with the remainder in Virginia. Fort Patrick Henry, South Holston and Boone Reservoirs, operated by Tennessee Valley Authority (TVA), are impoundments of the river. Boone Reservoir is partially supporting due to polychlorinated biphenols (PCBs) and chlordane from contaminated sediment. The majority of assessed streams (82 percent) are fully supporting of designated uses. The average depth of Kendrick Creek is three feet and the average width is ten feet. The stream generally meanders the entire 9,300 linear feet adjacent to the proposed installation. The substrate is limestone and sandy clay. Streamside vegetation is native plants, grasses, shrubs and trees.

DESCRIPTION: The proposed project is an 8" to 15" sanitary sewer system with six (6) proposed crossings of Kendrick Creek and two (2) proposed crossings of tributaries of Kendrick Creek. The length and disturbance due to (stream) crossings will be approximately 20 linear feet per disturbance for a total of 160 linear feet. The method of excavating will be Open Cut with diversion of the stream by cofferdams. Erosion and sediment control structures will consist of silt fences and berms placed between the proposed construction and Kendrick Creek. Trench dewatering discharge will be pumped through silt bladders. Creek crossings will be bound by silt fencing. If blasting is necessary "Controlled Blasting" methods will be employed. Those methods include Line Drilling, Presplitting and Cushion Blasting. The construction equipment that will be used for this project includes track hoes, backhoes, dump trucks and other small construction equipment. The soil excavated from the trench will be placed to the upstream side of the construction area while the sewer line trench is being excavated. After the sewer line pipe is installed in the trench, crushed stone will be backfilled to 12 inches above the pipe. The remainder of the trench will be filled with the soil previously excavated and compacted in 6-inch lifts. Vegetation in the disturbed area will be re-established as soon as possible with a Kentucky 31 fescue and annual rye mix. Temporary sediment controls such as silt fences, straw bale barriers, stream crossings, check dams and sediment traps will be used to prevent soil from entering the stream during construction. This System will serve the City of Kingsport "Crossroads" annexation area. The sewer will extend approximately 9,300 linear feet adjacent to Kendrick Creek and terminating near the intersection of Kendrick Creek Road and Mitchell Road.

PERMIT COORDINATOR: Dorsey Horne, STATE OF TENNESSEE, Department of Environment and Conservation, Division of Water Pollution Control, 7th Floor, L & C Annex, 401 Church Street, Nashville, Tennessee 37243-1534

USGS QUAD: SULLIVAN GARDENS 189-NE





BACKFILL DETAIL FOR CREEK CROSSINGS

N.T.S.

Controlled Blasting Specifications

Line Drilling : Line Drilling involves drilling a row of closely spaced holes along the final excavation line, which are not loaded with explosives. The line of holes creates a plane of weakness to which the final row of blast holes can break.

Average Specifications for Line Drilling

Borehole Diameter (inches)	Spacing (feet)
2.0	0.33 - 0.67
3.0	0.50 - 1.00

Presplitting Closely spaced holes which are drilled along the final excavation line, with a very light load of explosives used. Presplit holes are normally fired *prior* to the adjacent production blastholes, and for best results with no delays between the charges.

Average Specifications for Presplitting

Hole Diameter (inches)	Spacing (feet)	Explosive Charge (lb/ft)
1.50 - 1.75	1.00 - 1.50	0.08 - 0.25
2.00 - 2.50	1.50 - 2.00	0.08 - 0.25
3.00 - 3.50	2.50 - 3.00	0.13 - 0.50
4.00	2.00 - 4.00	0.25 - 0.75

Cushion Blasting Closely spaced holes drilled along the final excavation line, loaded lightly and fired *after* the main excavation has been removed. Boreholes for cushion blasting are often larger diameter than presplitting, and burden is always greater than spacing.

Average Specifications for Cushion Blasting

Hole Diameter (inches)	Spacing (feet)	Burden (feet)	Explosive Charge (lb/ft)
2.0 - 2.5	3.00	4.00	0.08 - 0.25
3.0 - 3.5	4.00	5.00	0.13 - 0.50
4.0 - 4.5	5.00	6.00	0.25 - 0.75
5.0 - 5.5	6.00	7.00	0.75 - 1.00
6.0 - 6.5	7.00	8.00	1.00 - 1.50

(Source: Bureau of Mines Information Circular 8925, *Explosives & Blasting Procedures Manual*, 1986)